Self-assembly and characterization of biopolymer particles via electrostatic interaction between flaxseed mucilage and protein

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Nowadays, there has been an increasing interest in the food industry to utilize natural ingredients as an alternative for synthetics due to consumer demands. Previous works have shown that the interaction of proteins and polysaccharide may improve the functionality of the proteins. The aim of this study was to fabricate electrostatic complexes of Flaxseed mucilage (FM) and Flaxseed protein (FP), utilized as a new source of biopolymers, using pH variation. Different ratios of these two biopolymers were studied. Particle size and charge, turbidimetric analysis, molecular structure (FTIR), the surface morphology and gel electrophoresis (SDS-PAGE) experiments revealed that at pH 2.5, there was an electrostatic interaction between FP and FM to prepare particles and the combination of the protein with Mucilage at a ratio of 70: 30 (total concentration of 0.5 %) was selected as the optimum formulation. The functional behaviours (solubility, emulsifying and foaming properties) of the particles exhibited that these colloidal bioparticles have potential application in encapsulation of bioactive components and emulsion and foam stabilization.

Keywords: Flaxseed protein, Mucilage, Bioparticle, Electrostatic interaction, Self-assembly

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